# Amherst College

**Trading Club Amherst College <trading@amherst.edu>**

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## [Quant Club] Third Meeting Fall 2023 (Sunday 8-9 PM Beneski 107 - Paino)
1 message

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**Trading Club Amherst College** <trading@amherst.edu>               Wed, Nov 8, 2023 at 3:51 AM
To: Amherst Quant Trading <amherst-quant-trading-l@amherst.edu>, ea02dc85-2fc0-49f2-3b4b-76286dc18252@relay.engage.campuslabs.com
Cc: Alan Li <ali24@amherst.edu>
Bcc: Ryan Ji <tji26@amherst.edu>

**Note:** *Please feel free to share this email with anyone you think might be interested in this as well!*

Dear Quant Enthusiasts,

I hope you all had a great week so far! It was great to see some of you in our last meeting. Below I am mentioning logistics and agenda for the next meeting (along with a brainteaser that we will discuss) and the summary of last meeting along with https://forms.gle/ZCWdNJnYKuXuwa1V9 where you can submit your information if you are interested in obtaining a **referral from me at D.E. Shaw & Co.** for internships and also fellowships at https://fellowships.deshaw.com/. I have done this program, and can say that it was a great experience (screenshot ft. me from the official website is below). Feel free to reach out if you have any specific questions as well, and I will be more than happy to help whenever I can!

## Logistics:

Sunday, November 12, 2023
8:00 PM - 9:00 PM Quant Trading Club Meetings (Confirmed)
Beneski, 107 - Paino Lecture Hall

## Meeting Agenda:

1. **[Sebastein Brown is leading this]** amherstquantclub.github.io Website team check-in *(let me/Seb know if you are interested)*
2. ***Optiver Trading at Close: Quant Research Based Competition*** https://www.kaggle.com/competitions/optiver-trading-at-the-close team formation and check-in with initial insights
3. Briefly introduce the concept of **Markov Chains from Stochastic Processes**
4. Discuss a **brainteaser** mentioned below
5. Have time for some **Q&A** regarding anything related to club and recruiting as well!

## Brainteaser:

- If you keep tossing a fair coin, what is the expected number of tosses that you have to do until you can have HHH in a row? what about THH in a row?
    - now think if we keep flipping until we get one of the above two (HHH or THH). Find the probability that you get an HHH subsequence before THH?
    - Let's add more fun to the game. Instead of fixed triplets for the two players, the new game allows both players to choose their own triplets. Player 1 (say) chooses first and announces it, and then player 2 chooses a different triplet. The player whose chosen triplet appears first in the sequence of flips, wins the game. Assuming both players are perfectly rational, and that both would like to maximize their probability of winning, would you go first? If you go second, say, then what is your probability of winning?

See you all soon,
**Dhyey Mavani**
**Computer Science, Mathematics, and Statistics major**
**Amherst College Class of 2025**
Linkedin | Personal Website | Personal Email: ddmavani2003@gmail.com | School Email: dmavani25@amherst.edu
***Available in Eastern Time Zone (Preferably Tue and Thu)***

**Loeb Center's Peer Career Advising, and ECON-361 TA Role Hours:**

- **Weekly 1:1 Career Guidance:** Thursday 10:00 AM to 12:00 noon
- **PCA Resume Review Clinics:** Wednesday 6:30 PM - 8:00 PM
- **ECON-361: Advanced Econometrics TA OH:** Monday 7 PM - 9 PM

P.S. Stuff from last meeting and solutions to last week's brainteaser:

1. Pairing up people for the website team so that we can develop (for example amherstquantclub.github.io) to summarize resources and make a one stop resource, and build a virtual presence for **Amherst Quant Club (rebranded version): Discussed and Seb Brown will reach out soon.**
2. **Pairing and personally mentoring people to participate in** *Optiver Trading at Close: Quant Research Based Competition* https://www.kaggle.com/competitions/optiver-trading-at-the-close (credit: Nikolai Dammholz), here you will have two months to come up with data sciency models to predict movements of close prices with teams of upto 5: **Discussed and Seb Brown will reach out soon. Right now one team is: Dhyey (advisor), Seb, Prakhar, Nikolai, Winton, Ryan Ji.**

Previous week's brainteaser:

- Let's start with 1 player game. Your strategy is supposed to maximize earning from a 20 sided die, and you have 100 rounds. You can either roll or take the money equal to the face of dice up on the table. Find the EV of the game?
    - Now, if you take the money, then you have to roll again and take dice off the table, how do you think your strategy and EV would change in this case?
    - One more variant: come back to the initial conditions mentioned, and say now casino gets to play with you. Once you take the money, casino gets to choose whether or not to re-roll the die (Note: This is complicated enough, so you cannot calculate the

exact solution by hand, but I am curious to hear how you think this version will work) Hint here is to think what number you are willing to accept and move on? Let's say you rolled 19, you take it, the obviously casino re-rolls, now what happens?

- let's say we take you playing strategy of taking anything that is 10 or higher, what do you think casino is going to do?
- why don't we play a scenario out: say you reroll if you get 10 or lower, and casino re-rolls you if you get 11 or higher, then how much money you will make in expectation?
- In the last scenario, what you think is the average worth of each roll approximately, and how would you modify your strategy after realizing this?

***SOLUTION ATTACHED*** *(I have written down my logic step by step)*
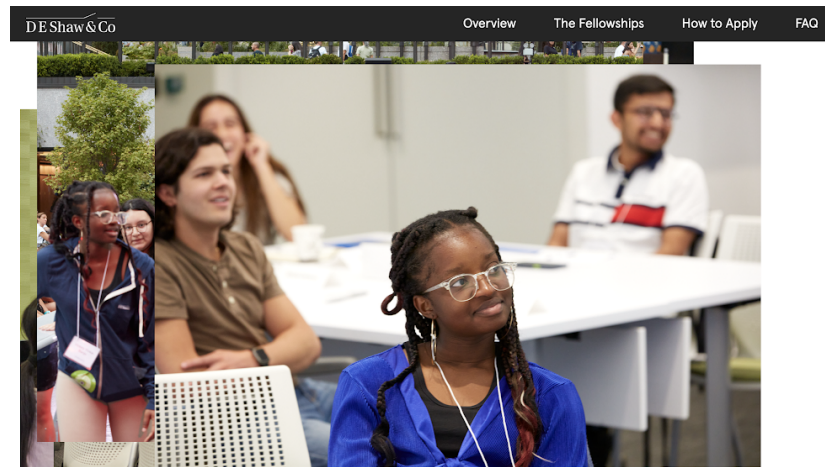


📄 **Meeting 2 Brainteaser Solution.pdf**
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